Claim Amendments

Please amend claims 25, 30, 34, 36, 37, and 39 as follows:

Please cancel claims 1-24 and 35 as follows:

Please add new claims 43-58 as follows:

Listing of Claims

Claims 1-24 cancelled

25. (currently amended) An MIM capacitor structure ~~for use in mixed mode electronic processing~~ comprising a protection layer to prevent interdiffusion of electrode metal and capacitor dielectric material:

a bottom non-oxide conductive electrode comprising said metal;

a first protection layer on the bottom conductive electrode;

a dielectric layer comprising silicon oxide on the first protection layer; and,

an upper non-oxide conductive electrode on the dielectric layer comprising said metal.

26. (original) The MIM capacitor structure of claim 25, further comprising a second protection layer disposed between the

dielectric layer and the upper conductive electrode.

27. (original) The MIM capacitor structure of claim 25, wherein the first protection layer comprises a silicon rich oxide (SRO) having a relatively higher silicon content compared to stoichiometric SiO_2.

28. (original) The MIM capacitor structure of claim 26, wherein the second protection layer comprises a silicon rich oxide (SRO) having a relatively higher silicon content compared to stoichiometric SiO_2.

29. (original) The MIM capacitor structure of claim 25, wherein an uppermost portion of the bottom and upper conductive electrodes comprise a material selected from the group consisting of Ta, TaN, and TaSiN.

30. (original) The MIM capacitor structure of claim 25, wherein the dielectric layer comprises PECVD silicon oxide.

31. (original) The MIM capacitor structure of claim 25, wherein the first protection layer is formed having a thickness between

about 25 Angstroms and about 200 Angstroms.

32. (original) The MIM capacitor structure of claim 26, wherein the second protection layer is formed having a thickness between about 25 Angstroms and about 200 Angstroms.

33. (original) The MIM capacitor structure of claim 25, wherein the upper and bottom conductive electrodes comprise a metal selected from the group consisting of aluminum, copper, tantalum, tungsten, titanium, and alloys thereof.

34. (currently amended) An MIM capacitor structure ~~for use in mixed mode electronic processing~~ to prevent interdiffusion of electrode metal and capacitor dielectric material to achieve a stable capacitance comprising:

a bottom non-oxide conductive electrode comprising tantalum;

a bottom protection layer comprising silicon rich oxide (SRO) on said bottom conductive electrode;

a dielectric layer comprising an oxide on the bottom conductive electrode;

a top protection layer comprising silicon rich oxide (SRO) on the dielectric layer; and,

an upper non-oxide conductive electrode comprising tantalum

on the top protection layer.

35. cancelled

36. (currently amended) The MIM capacitor structure of claim 34, wherein the top protection layer comprises [[a]] the silicon rich oxide (SRO) having a relatively higher silicon content compared to stoichiometric SiO_2.

37. (currently amended) The MIM capacitor structure of claim 34 [[35]], wherein the bottom protection layer comprises [[a]] the silicon rich oxide (SRO) having a relatively higher silicon content compared to stoichiometric SiO_2.

38. (original) The MIM capacitor structure of claim 34, wherein an uppermost portion of the upper and bottom conductive electrodes comprise a material selected from the group consisting of Ta, TaN, and TaSiN.

39. (currently amended) The MIM capacitor structure of claim 34, wherein the dielectric layer comprises ~~PECVD~~ silicon oxide.

40. (original) The MIM capacitor structure of claim 34, wherein the top protection layer is formed having a thickness between about 25 Angstroms and about 200 Angstroms.

41. (original) The MIM capacitor structure of claim 34 [[35]], wherein the bottom protection layer is formed having a thickness between about 25 Angstroms and about 200 Angstroms.

42. (original) The MIM capacitor structure of claim 34, wherein the upper and bottom conductive electrodes comprise a metal selected from the group consisting of aluminum, copper, tantalum, tungsten, titanium, and alloys thereof.

43. (new) The MIM capacitor structure of claim 25, wherein the first protection layer has a higher density including refractive index compared to the dielectric.

44. (new) The MIM capacitor structure of claim 26, wherein the second protection layer has a higher density including refractive index compared to the dielectric.

45. (new) The MIM capacitor structure of claim 25, wherein the

first protection layer comprises a nitrogen containing silicon rich oxide (SRO) having a relatively higher silicon content compared to stoichiometric SiO_2.

46. (new) The MIM capacitor structure of claim 26, wherein the second protection layer comprise a nitrogen containing silicon rich oxide (SRO) having a relatively higher silicon content compared to stoichiometric SiO_2.

47. (new) The MIM capacitor structure of claim 26, wherein the bottom electrode and first protection layer have a wider dimension compared to the upper electrode and second protection layer.

48. (new) The MIM capacitor structure of claim 34, wherein the bottom and top protection layers have a higher density including refractive index compared to the dielectric.

49. (new) The MIM capacitor structure of claim 34, wherein the bottom electrode and bottom protection layer have a wider dimension compared to the top electrode and top protection layers.

50. (new) The MIM capacitor structure of claim 34, wherein the bottom and top protection layers comprise a nitrogen containing silicon rich oxide (SRO) having a relatively higher silicon content compared to stoichiometric SiO_2.

51. (new) An MIM capacitor structure to prevent interdiffusion of electrode metal and capacitor dielectric material to achieve a stable capacitance comprising:

a bottom conductive electrode comprising said metal;

a bottom protection layer comprising nitrogen containing silicon rich oxide (SRO) on said bottom conductive electrode;

a dielectric layer on the bottom conductive electrode;

a top protection layer comprising nitrogen containing silicon rich oxide (SRO) on the dielectric layer; and,

an upper conductive electrode on the top protection layer comprising said metal.

52. (new) The MIM capacitor structure of claim 51, wherein an

uppermost portion of the upper and bottom conductive electrodes comprise a material selected from the group consisting of Ta, TaN, and TaSiN.

53. (new) The MIM capacitor structure of claim 51, wherein the dielectric layer comprises silicon oxide.

54. (new) The MIM capacitor structure of claim 51, wherein the top protection layer is formed having a thickness between about 25 Angstroms and about 200 Angstroms.

55. (new) The MIM capacitor structure of claim 51, wherein the bottom protection layer is formed having a thickness between about 25 Angstroms and about 200 Angstroms.

56. (new) The MIM capacitor structure of claim 51, wherein the upper and bottom conductive electrodes further comprise a metal selected from the group consisting of aluminum, copper, tantalum, tungsten, titanium, and alloys thereof.

57. (new) The MIM capacitor structure of claim 51, wherein the bottom and top protection layers have a higher density including refractive index compared to the dielectric.

58. (new) The MIM capacitor structure of claim 51, wherein the bottom electrode and bottom protection layer have a wider dimension compared to the top electrode and top protection layers.